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ABSTRACT

This paper describes the results of research examining the racial and socioeconomic segregation of public schools in two very different cities, Philadelphia (Pennsylvania) and Houston (Texas). Factors that explain the degree of racial and economic segregation and the consequences of this segregation for student academic achievement were examined. Data for the analyses were derived from census figures, the annual reports of the city school districts, and achievement test scores for the cities. In spite of the many differences between the two cities, there were striking similarities in the composition and character of their school districts. Both provide educational services to higher proportions of minorities and the poor than are observed in their respective metropolitan area populations. Results observed for the impact of neighborhood segregation, parental-student choice, and the development of magnet school programs were very similar. Analysis indicated that overall the most important determinant of academic success for city schools was the proportion of students from low income families. The failure of such schools is the result of a series of characteristics such as withdrawal of resources, diminished teacher commitment, and disinterested families and communities. (Contains 9 tables and 17 references.) (SLD)

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The National Center on
Education in the Inner Cities

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 # 95-6

Racial and Economic Segregation and Educational Outcomes: One Tale--Two Cities

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For the last 30 years a wide range of social science research has debated the relative importance of racial and economic characteristics as determinants of family structure, crime, unemployment, and school achievement. Wilson has argued that the heated controversy following the Moynihan report resulted in many social scientists withdrawing from research examining the degree to which social and economic characteristics of the African-American population may be attributed to race culture, racial discrimination, and/or socioeconomic status. Very generally, public policy recommendations which have emerged from this research have been in one of two forms: some have advocated specific remedial policies directed at African Americans (e.g., affirmative action), while others have been neutral with regard to race, arguing that there are generic conditions (e.g., urban poverty) affecting all racial and ethnic groups which must be addressed. Recently Steinberg has argued that social scientists have increasingly emphasized the importance of social and economic status, and withdrawn from the issue of race.

We join this debate. This paper describes the results of research examining the racial and socioeconomic segregation of public schools in two very different cities: Philadelphia, Pennsylvania and Houston, Texas. We have examined two issues: What are the factors which may be used to explain the degree or racial and economic segregation of students in schools? What are consequences for the academic achievement of students?

The answer to the first question involves three major factors. (a) Cities are segregated by race/ethnicity and socio-economic status and schools draw from limited geographic areas. (b) Different children attend public schools at different rates. (c) There are school district policies and programs

designed to overcome the effects of the first two factors. These policies and programs have reduced racial segregation but have increased the economic segregation of students.

The answer to the second question is less straightforward. There are strong correlations between the percentage of students in schools who are racial/ethnic minorities, the percentage of students who are from low-income families, and the average achievement level of schools. Because of the substantial correlations between the racial composition and the socioeconomic composition of schools it is impossible to empirically isolate the effects of these two factors on achievement. Yet in spite of these correlations, it appears that the socioeconomic composition of schools is the more important determinant of academic success.

School district policies aimed at achieving racial integration, following the 40-year-old mandate of the Brown decision, have had the consequence of exacerbating the concentrations of low-income students in isolated schools. These policies therefore should be reconsidered, and their implementation reformulated.

Methods and Data Sources

The data used in this analysis are derived from three sources in both Houston and Philadelphia. The first source is the 1990 U.S. Census Summary Tape Files 3A which provide information summarizing the number and characteristics of persons by census tracts. For this research we used tract-level information describing the racial and ethnic composition, the percentage of students attending private schools, and the percentage of persons whose 1989 family income was below 185% of the poverty level in each tract. We use 185% of poverty, rather than the poverty level, so that the census information is parallel to information which is available on students. To qualify for free or reduced-price lunches, a student's family income must be below 185% of poverty.

Information describing each school was taken from annual reports published by the two school districts. In Philadelphia these are known as the Management Information Center or "MIC" reports. In

Houston, they are known as School Profile Reports. We have used data describing the schools in the 1990-91 academic years. For each school in both districts, we extracted information describing the number of students, the racial composition, the average standardized reading test score, average daily attendance rates, pupil turnover, and the percent of students receiving free or reduced-price lunches. Information on the number of students who are provided transportation assistance is given in Philadelphia, but not in Houston. Houston provides information on the presence of magnet school programs; this information is not given in Philadelphia, although schools are designated as either desegregated or "targets for desegregation." We have, somewhat arbitrarily, defined "magnet schools" in Philadelphia as those in which over 30% of the students received mass transit tokens or were bused to school.

Achievement test scores are provided for each grade represented in each school. The achievement scores provided are not the same for the two districts. In Philadelphia the average national percentile rank is given for each grade. Houston reports the "grade equivalent" test score, which is expressed in terms of the grade and month at which the median student was reading. We have taken the difference between the grade that students are in and their reading level obtained as a measure of achievement. For example, if third graders were reported reading at 3.25 level, they were given an achievement test score of .25. In another school if the median test score for third graders was 2.75, their achievement level was calculated as -.25. We have generated an average test score for the entire school.[1]

Because were are examining the relationships between the nature of schools and the nature of the communities in which they were embedded it was necessary to link the census information with the school information. Our premise was that the areas where students live, not necessarily the immediate neighborhood surrounding the school, comprise the communities in which a given school is embedded.

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[1] In Philadelphia the school average test score is weighted by the number of students in each grade. This was not possible in Houston where enrollment by grade is not reported. Thus we assumed that for each school there were an equal number of students in each grade.

Thus it is necessary to know where each student lives, to obtain information describing those areas, and to summarize that information for each school.

This task was made possible by "Pupil Directory Files." These are databases which include all students enrolled in the public schools. Among other things, they identify the school which each student attends and the census tract in which each student resides. Using a computer matching program, data describing each student's census tract were attached to each student's record. These data were then aggregated for each school by calculating the average value of the characteristic for the tracts represented in each school. Thus, if a school draws students from several different census tracts and we are attempting to characterize the rates of poverty among children between the ages of 5 and 17 years, we would multiply the poverty rates of each tract by the number of students living there. These products are then summed for the tracts represented in the school and divided by the total number of students. This creates a weighted average of the poverty rates across the neighborhoods represented in the school (See Yancey, Goldstein, Webb, & Rigsby, 1986). After these neighborhood data were aggregated, we merged it with data describing characteristics of the school, thus producing a single data file which summarizes the characteristics of schools and the communities in which they are embedded.

Brief Descriptions of Philadelphia and Houston

The comparison of Philadelphia and Houston provides a contrast between two very different American cities. One is in the "Rust Belt," the other in the "Sun Belt." One is an old manufacturing city currently undergoing transformation to a postindustrial economy. The second is a postindustrial city with an economy driven by medicine, space exploration, and the administration and distribution of oil.

In 1990 the Philadelphia metropolitan area was larger in population (4.8 million) than Houston (3.3 million). Philadelphia experienced its highest rates of growth during the 19th and early 20th centuries. Since 1950, although the suburban population has continued to grow, the city of Philadelphia's population has declined by 25%. Houston, by contrast, experienced little growth until the 1920s, after

which its growth has been exponential. The 1990 population of the city of Houston is 3.8 times larger than what it was in 1950.

The boundaries of Philadelphia have remained unchanged since 1854, whereas Houston has continued to grow by annexation of nearby areas. In 1986 Houston covered 572 square miles, more than four times Philadelphia's 136 square miles. The different histories of geographic and demographic growth have the somewhat anomalous result that in terms of the proportion of the metropolitan area's population which is in the central city, Philadelphia is more suburbanized than Houston. Only 45% of the Philadelphia region's population lives in the central city; by contrast, 68% of the Houston metro area population lives in the city of Houston. On the other hand, if one defines suburbanization not by political boundaries but by population density, one must conclude that the city of Houston is more suburban than Philadelphia whose population density is three times that of Houston.

The City of Philadelphia and the Philadelphia School District share common boundaries. This is not the case in Houston: The area served by the Houston Independent School District covers about one fourth of the city of Houston, and half of the city's population. Further, some parts of the district are outside the city of Houston.[2]

In spite of the differences between the two metropolitan areas, there are striking similarities in the composition and character of the two school districts. Table 1 describes the size of the populations of the two metropolitan areas, the areas served by the two school districts, the size of the school district population age 5-17, and the number of students served by the districts in the 1990-91 academic year. The number of school-age children is larger in Philadelphia: 264,000 compared to 215,000 in the area served by the Houston Independent School District. Yet, as a consequence of the higher rates of

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[2] The boundaries of the Houston school district which are used in this analysis were determined by identifying all census tracts in which at least one student lived. This is based on the Houston "Pupil Directory File" which provides the census tract in which each student lives.

attendance to private and parochial schools in Philadelphia (29%), contrasted with 15% in Houston[3], the number of students served by the Houston system is slightly larger (194,512) than the number served by Philadelphia's public schools (190,977).

Table 1
Population Size, Philadelphia and Houston

	Houston	Philadelphia
Metro Area	3,301,874	4,856,811
School District	1,206,852	1,585,577
School Age Pop.	214,613	263,609
Students 1990-91	194,548	190,977

Table 2 summarizes the racial/ethnic and economic characteristics of the two metropolitan areas, the populations served by the two school districts, and students attending public schools. The two metropolitan areas have similar proportions of their populations that are African American. Houston has a substantially larger Latino population (21%) than Philadelphia (4%). The majority of Philadelphia's Latino's are Puerto Rican in origin, whereas Houston's Latino population is predominantly Mexican in origin. The proportion of low-income families is higher in Houston (30.6%) than in Philadelphia (21.1%).

While there are differences in economic and ethnic composition of the metropolitan areas, these school districts share the common characteristic of providing educational services to higher proportions of minorities and the poor than are observed in their respective metropolitan area populations. The percentage of students who are African American, Latino, or Low Income is more than twice the percentage of population that is African American, Latino, or Low Income in the metropolitan areas. This is a consequence of three factors: (a) the ecological centralization and concentration of minorities and low-income families in the central city and in the area served by these school districts; (b) differences in

[3] Source: Summary Tape File 3A: 1990 Census of Houston and Philadelphia. Limited to population living in areas served by respective school districts.

the age distribution between different racial/ethnic and income groups; and (c) the varying rates at which students/parents choose to attend public schools.

Table 2
Racial/Ethnic and Economic Characteristics of the Philadelphia and Houston Metro Area, School District, School-Age Population, and Public School Students

Houston

	White	African American	Latino	Asian	Low-Income[4]
Metro Area	56.5	18.2	21.1	3.7	30.6
School District	38.6	28.0	30.3	2.8	42.5
School Age Pop.	21.9	33.0	42.4	2.7	47.5
Students 1990-91	14.3	38.1	44.9	2.6	54.6

Philadelphia

	White	African American	Latino	Asian	Low-Income
Metro Area	75.4	18.9	3.4	2.1	21.1
School District	52.2	39.5	5.3	2.7	36.8
School Age Pop.	40.6	47.7	8.4	3.3	42.4
Students 1990-91	23.1	62.6	9.7	4.4	61.2

The ecological centralization/concentration effects are seen when we compare the racial/ethnic and income characteristics of the metropolitan area population with the population served by the district. Except for Houston's Asian population, which appears to be decentralized, the pattern is clear. There are

[4] Because the census does not provide specific data, there are two estimates in these tables. The size of the white population age 5-17 is defined by subtracting black, Latino, and Asian populations from the total. Data on race and Hispanic origin is not available by age groups. Secondly, data are not available describing the number of school-age persons who are below 185% of poverty. The number of persons age 5-17 whose household income falls in this category is estimated by assuming the percent of the population between the poverty line and 185% of poverty who are age 5-17 is the same as the proportion of the population below poverty who are school age. To the degree that "low-income families" have lower fertility than those below poverty, this overestimates the number of the school-age population who are of low income.

higher proportions of minorities and low-income families, and lower proportions of whites, living in the areas served by the school districts.

Comparing the percentage of the population who have these characteristics with the percentage of the school-age population provides an indication of the impact of the age distributions of these groups. In both cities the proportion of the school-age population that is white is lower than the proportion of whites in the total population. By contrast the younger age structure of African Americans, Latinos, and those with low family income is indicated by the higher proportions of the school-age population that had these characteristics.

Finally, comparing the characteristics of the school-age population with the students enrolled in these public school systems provides an indication of the impact of private-school choice on the racial and ethnic characteristics of schools. The proportion of white students is lower than the proportion of the school-age population that is white. Conversely, the proportion of enrolled students who are African American, Latino, and low income is higher than the proportion of the school-age population who have these characteristics. Apparently, higher income and white students attend private schools at higher rates.

An indication of the relative importance of these three factors on the racial and economic characteristics of the public school population is provided by comparing the differences in the composition of these four populations shown in Table 2. The least important factor appears to be differences in age distributions, where the average difference is 9% in Houston and 7% in Philadelphia. The average effects of the concentration of minorities and low-income families in the central areas covered by these school districts is 12% in Houston and 14% in Philadelphia. The most important factor is the effect of private school attendance, which is 12% in Houston and 16% in Philadelphia. This difference between the two cities is not unexpected, given the higher rates of attendance to private and parochial schools in Philadelphia.

Segregated Cities and Segregated Schools

The parallels of the two cities in terms of the higher concentration of poor and minorities in the school district and in the schools is repeated when we examine the degree to which the three major racial/ethnic groups are segregated across the metropolitan areas, the central city school districts, and in the schools. Table 3 presents levels of segregation as measured by the indices of dissimilarity of population groups across census tracts comprising the metropolitan areas, the school districts, and of students across middle and elementary schools[5]. Our measure of segregation of schools does not take into consideration levels of segregation within schools. To the degree that minorities or low-income students are placed in special programs or tracts within schools, these measures underestimate the segregation of students. The segregation of low-income families is the dissimilarity between the distributions of persons whose 1989 income was less than 185% of the poverty level and those whose income was above 185% of poverty across census tracts.

Both cities are segregated by race and ethnicity and to a lesser degree (by this measure) by economic status. The major difference between the two cities is the higher levels of racial/ethnic segregation which characterize Philadelphia.[6] The difference is particularly marked in the case of segregation between Latinos and whites. In Houston the level of segregation between Latinos and whites

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[5]. The index of dissimilarity reflects the difference in the distribution of two groups across a series of nominal categories. In the case of residential segregation it reflects the difference in the percentage distributions of two groups across census tracts. One interpretation of dissimilarity is that it reflects the proportion of either group that would have to move from census tracts which they now dominate to other tracts in order to balance the two distributions. Thus in 1990 82 percent of whites would have to change census tracts in order to achieve racial integration. For details of calculation methods see Taeuber and Taeuber (1965).

[6] An additional analysis examining residential segregation of racial/ethnic groups by poverty status indicated that the lower level of segregation of Houston's white and Hispanic populations is particularly marked among lower status whites who are residentially integrated with Houston's Latino population.

is 52, whereas in Philadelphia it is 69. In both cities the highest level of segregation is found between African Americans and whites, the lowest level between whites and Latinos.

Table 3
Racial/Ethnic Segregation in Houston and Philadelphia:
Metro Area, School Districts, and Schools

Houston

	Population Across Tracts		Students Across
	Metropolitan Area	District/ City	Elementary and Middle Schools
African American/White	67	72	62
African American/Latino	59	68	66
Latino/White	50	52	56
Low Income/Other	38	35	48

Philadelphia

	Population Across Tracts		Students Across
	Metropolitan Area	District/ City	Elementary and Middle Schools
African American/White	77	84	74
African American/Latino	67	71	78
Latino/White	64	69	70
Low Income/Other	42	35	44

Comparing the levels of racial segregation across the entire metropolitan areas to those found in the central city school districts indicates that racial segregation across the census tracts served by the school districts is higher than the segregation found across the entire metropolitan area. Thus the areas served by these school districts not only have higher proportions of minorities but are also more highly segregated. Economic segregation across the entire metropolitan areas is moderately higher than in the areas served by the central city school districts.

Given the segregation of the population across these school districts, coupled with the fact that schools generally draw students from relatively restricted geographic areas, it is expected that the level

of segregation in schools will reflect the segregation of neighborhoods. While there are strong correlations, the patterns are far from perfect. The segregation between African Americans and Latinos, and between Latinos and whites, is higher among students in schools than it is among the residential population across the school districts. Conversely, the segregation of African-American and white students across schools is lower than the segregation of the African-American and white populations across census tracts within the school districts. The segregation of students who are qualified for free or reduced-price lunches is markedly higher than the segregation of populations whose family income was less than 185% of the poverty level from those with higher incomes.

These anomalies, while relatively small, indicate that there are factors besides the ecological organization of cities and their neighborhoods which affect levels of segregation in schools. In spite of the expected parallels between the racial and economic character of the cities' neighborhoods and the racial and economic character of the schools, the two are not mirror images of one another.[7] There are at least two factors which distort the reflection. The first distortion stems from the fact that all school-age children do not attend public schools. As we have seen above (Table 2) minorities and students from low-income families are more likely to attend public school. To the degree that private school attendance varies across a city's neighborhoods, it affects the correlation between the character of neighborhoods and character of schools.

The second distortion is found in the degree to which students attend schools near their homes. In order to increase the level of racial integration, both school districts have established magnet school

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[7] The bivariate correlations between the characteristics of census tracts included in school feeder areas and the characteristics of students are presented below.

Correlations Between Characteristic of Community Areas and Schools

	% Low Income	% African American	% Latino	% White
Philadelphia	.799	.966	.980	.959
Houston	.730	.665	.868	.705

programs in which selected schools provide special programs designed to attract pupils from throughout the school district. In Philadelphia 63 schools have been desegregated or are targets for desegregation. Twenty-five percent of the students attending these schools are bused. Among schools dominated by minority students, 5% of the students are bused. In Houston free transportation is provided for students attending schools which have magnet programs. In both cities magnet schools draw from larger and more heterogeneous geographic areas.

Participation in magnet school programs is not random, nor is it evenly distributed across these cities. Students and their families must make the investment of applying to and participating in these programs, and all students who apply are not accepted. To the degree that magnet school programs select certain types of students away from local neighborhood schools, these programs distort the relationship between neighborhood and school characteristics.

In order to explore the effect of students' choice to attend private or magnet schools, we have conducted a series of multiple regression analyses in which we relate the characteristics of school communities to the characteristics of schools. For each of four characteristics of schools (the percent of students who were African American, Latino, or white, or were from low-income families) we examined the relationship with the corresponding characteristics of the schools' communities. In addition we included the percentage of children in the school communities who were attending private schools, and a dummy variable marking the presence of magnet programs. The initial results indicated that these relationships may be not be linear. In subsequent analyses, we included the square of the basic variables to test for curvilinearity. For example, in the analysis of the percent of students who were African American, we included both the percent of the community that was African American and the square of the percent African American.

The results of these analyses are presented in Table 4, showing the regression coefficients which were found to have significant effects upon the characteristics of schools. These results are also shown in Illustration 1, which presents scatterplots of the relationships.

Table 4
Results of Regression Analyses of Characteristics of Community Areas and Students for Magnet and Other Schools

Philadelphia

Community Level Characteristic	% Low Income	% African American	% Latino	% White
X	2.433	1.6326	1.222	.362
X^2	-.0186	-.0053	N.S.	.0067
% Private		.302	.053	N.S.
Magnet Program	-10.952	-3.894	N.S.	6.041
a	16.793	-9.83198	-1.9314	-1.552
R^2	.771	.945	.962	.938

Houston

Community Level Characteristic	% Low Income	% African American	% Latino	% White
X	2.100	1.339	1.967	-.0195
X^2	-.0121	-.0027	-.0087	.0101
Private		.496	.325	N.S.
Magnet	-19.7397	N.S.	-6.641	5.9429
a	9.1447	-6.301	-8.407	1.0568
R^2	.635	.944	.906	.837

There are striking similarities in the results obtained for the two cities. Looking at the effect of specific variables, we find there are positive coefficients for private school attendance for the analyses of the percent of students who are African American and Latino. This indicates that the percent of students who are African American or Latino is higher than expected, given the community populations, in schools drawing from communities where private school attendance is higher. In other terms it suggests that withdrawal of whites from the public school system results in increased minority percentages in some, but not all, schools.

There are varying effects of magnet schools. In both cities magnet schools have lower percentages of low-income students and higher percentages of white students than is expected given the communities in which they are embedded. In Philadelphia, magnet schools have lower proportions of African-American students than is expected given their school-communities, while in Houston magnet schools have a lower percent of Latino students than is expected. Finally, we see that with the exception of Latino students in Philadelphia, these relationships are curvilinear. Schools which draw students from communities which have moderate levels of family incomes and which are racially mixed have higher proportions of African-American, Latino, and low-income students than is expected. The shape of the curves for the percent of students who are white complement these results. White students living in racially mixed communities are less likely to attend local public schools. The proportion of white students rises sharply as one moves to school-communities which are dominated by whites.

There are at least three consequences of these distortions of the relationships between the character of communities and the characteristics of schools. First, as we have already seen in Table 2, the percent of public school students who are from low-income families and minorities is substantially higher than the percent of the school-age population which are served by these school districts. This increased proportion of low-income and minority students is higher in schools which are embedded in communities with high rates of private school attendance.

Second, the regression results suggest that magnet schools have higher proportions of higher income and white students than is expected given the nature of their school-communities. The degree of over- or underrepresentation of students attending magnet and neighborhood schools, by race/ethnicity and family income, is indicated in Table 5, which provides the distributions of students from these different groups in these two types of schools. In Houston, while some 30% of all elementary and middle school students attend magnet schools, only 22% of Latinos and 20% of low-income students do so. Conversely, 53% of white students and 51% of those who are not low income, attend magnet schools. A similar

pattern is found in Philadelphia, where some 19% of all students attend magnet schools, yet only 12% of African-American and Latino students and 14% of those with low family incomes--compared to 36% of white students and 36% of those whose family incomes are above 185% of poverty--attend magnet schools. The effects of these magnet school programs complement the effects of students' choices to attend private schools. A two-tiered system has emerged among public schools, one which is overrepresented by whites and students from higher income families, a second which is overrepresented by minorities and low-income students.

Table 5
Percent of Student Attending Local and Magnet Schools by Race and Family, Houston and Philadelphia

Houston	African American	Latino	White	Low Income	Higher Income	Total
Local Schools	69	78	47	80	49	70
Magnet Sch.	32	22	53	20	51	30
Philadelphia	**African American**	**Latino**	**White**	**Low Income**	**Higher Income**	**Total**
Local Schools	88	88	64	86	64	81
Magnet Sch.	12	12	36	14	36	19

The third consequence of these processes of choice and selection across these school districts and schools is their impact on the racial and economic segregation of students. As we have indicated above, the magnet school programs were created, in part, as a means of enhancing racial integration by providing programs that attract both white and minority students from across the school districts. Evidence indicates these programs have succeeded in this goal, particularly in regard to the degree of segregation between African-American and white students, which is lower in the public schools than across the school districts' neighborhoods. Magnet school programs have enhanced the educational opportunity of students who

participate, and they have probably reduced the number of white students who might otherwise attend private schools.

We have just seen that magnet school programs have created a two-tiered school system, one dominated by minorities and low-income students and a second with is overrepresented by whites and students from higher income families. Some of the racial and economic segregation that exists between schools is the result of these two tiers. In order to increase the level of racial integration across the entire district, the effectiveness of these programs must overcome the segregation which they generate. Their success in doing so is indicated by the levels of racial and economic segregation which exist among magnet schools compared to the neighborhood schools. Table 6 presents indices of dissimilarity across neighborhood schools and across magnet schools by race and ethnicity and family income level. The impact of these programs in both cities is similar. For every comparison, the level of racial segregation is lower among students attending magnet schools. This is particularly marked for African American and

Table 6
Segregation of Students Attending Neighborhood and Magnet Schools: Houston and Philadelphia

	Houston		Philadelphia	
	Neighborhood Schools	Magnet Schools	Neighborhood Schools	Magnet Schools
African American/White	72	42	80	27
African American/Latino	73	46	81	53
Latino/White	53	44	73	50
Low Income/Other	41	40	39	30

white segregation. Segregation between Latinos and African Americans, and Latinos and whites, is also lower in magnet schools. Students attending magnet school are also less segregated by socio-economic status, although the effects in Houston are minimal. The level of socioeconomic segregation among magnet schools in Houston is in part a consequence of the development of magnet school programs in

several schools which have high proportions of low-income students. Thus, within the Houston magnet school system, while most magnet schools have relatively low numbers of low-income students, there are a few truly exceptional schools which provide magnet school programs for low-income students.

One means of illustrating the impact of these programs on the economic and racial composition of schools is to measure the degree to which students are attending schools which are dominated by their own racial/ethnic or income group. Imagine asking the question for the average African-American student: "What percent of the students in the school which you attend are also African American?" We have done this for African-American, Latino, and low-income students, and computed the average percent for the entire school system, for magnet schools and for neighborhood schools. The results are presented in Table 7.

Table 7
Within-Group Contact of African-American, Latino, and Low-Income Students for All Schools, Magnet Schools, and Neighborhood Schools: Houston and Philadelphia

	Houston		
	All Schools	Magnet Schools	Neighborhood Schools
African American	66.7	51.7	73.3
Latino	69.6	49.3	75.4
Low Income	76.0	56.6	80.8

	Philadelphia		
	All Schools	Magnet Schools	Neighborhood Schools
African American	82.9	45.1	87.7
Latino	50.7	19.6	54.5
Low Income	82.3	63.0	85.4

The results are similar in the two school districts. African-American students attending magnet schools attend schools which on the average are 52 and 45% African American. By contrast, African-

American students who attend neighborhood schools attend schools which average 73 or 88% African American. Similar patterns are found for Latino students. Those who attend neighborhood schools attend schools which are dominated by Latinos. In Philadelphia, where Latino students are less than 10% of all students, the 90% of Latino students who attend neighborhood schools go to schools which are over 50% Latino. Finally, we see in the case of low-income students, across the entire district the average low-income student attends a school that is 76 or 82% low income. The concentrations of low-income students are smaller for the 20% who are attending magnet schools. Yet those who attend neighborhood schools, go to schools in which over 80% of their fellow students are also qualified for free or reduced-price lunches.

When we compare the levels of segregation found among neighborhood schools to that of magnet schools, we are led to the conclusion that the impact of these programs on most minority and low-income students is minimal. Most attend schools which are characterized by higher proportions of students of a similar race/ethnicity. The "success" of the magnet school programs in reducing racial segregation has depended on attracting higher status students away from neighborhood schools located in relatively poor neighborhoods. The result is an increased concentration of poor students in racially and economically homogeneous schools.

Race and Class Concentrations and School Success

We now turn to an examination of the impact of racial and social economic concentrations on school success. Many studies have investigated the impact of racial segregation on the academic achievement of African-American students. Indeed, the 1954 Brown decision was supported by a considerable amount of evidence regarding the negative impact of segregation upon African-American children. There is an equally large body of research documenting the importance of social and economic status on the educational success of individual students. Here we focus on the effects of racial and economic segregation on the success of schools.

The theoretical perspective which guided this investigation led us to place schools in their community context and to examine the relationships between the character of the schools' communities and the character of the schools. We now turn to an examination of how the character of schools affects their success in educating students. There are two sets of school characteristics which may affect educational outcomes: those which are external and define the basic parameters within which the school must operate, and those which are internal to schools. Measures of the second group of characteristics describe what takes place within schools.

The external factors include the character of communities in which schools are embedded as well as national, state, and local educational policies. The communities affect the social and economic characteristics of students, thus affecting the social and cultural baggage which students bring from their communities and families. Educational policies range from such broad issues as unemployment and family income maintenance to relatively restricted policies effecting particular school districts and schools: the presence of magnet programs, the tenure and experience of teachers and administrators, the ratio of students to teachers, school budgets, and styles of school governance.

What takes place within a school (the informal culture, social organization of students, the academic climate, the organization and style of teaching within classrooms, etc.) is in large part derivative of the constraints and resources prescribed by the social, economic, and policy context within which a school operates. It is also a consequence of the experience and initiative of teachers, administrators, parents, and students.

The effects of concentrating large numbers of students from particular racial or ethnic groups, or from low-income families, may be understood in two somewhat different ways. First, it could be argued that it reflects the cumulative effects of individual student characteristics. For example schools with large numbers of low-income students are expected to produce lower average achievement scores because of the contribution of each individual student to the schoolwide average. Alternatively, there may be cultural,

ecological, or organizational effects which are generated when students with particular characteristics are concentrated in a given school. Concentrations of low income students may contribute to the creation of a climate of "these kids can't learn" among teachers. Magnet schools specializing in science or the arts supposedly generate an informal culture among students which reinforces formal learning in classrooms. Large concentrations of low-income students may generate an informal culture within the school which may erode the formal learning in classrooms. Concentrations of students from particular cultural or economic groups may affect other characteristics of schools such as the rates of turnover of students and average daily attendance. High rates of turnover, or high rate of absences, make it difficult for teachers and students to follow a coherent curriculum over the school year. High turnover contributes to the social disorganization of the school and to the informal community of students. While some research has concluded that the school-level effects are minimal, other studies have concluded that school-level characteristics have important effects upon schools' success in educating students.

The data which are available make it impossible to separate the cumulative effects of individual characteristics from the organizational/ecological effects of concentrations of racial groups or poverty. To do so would require that we have information describing both individual students and their families, as well as information describing the compositional and organizational characteristics of schools. (see Gamoran: 1989; Pallas: 1994; Bichell and Kasarda: 1980).

There is a second important problem that is difficult to overcome when we attempt to evaluate the relative importance of concentrations of racial/ethnic groups and low-income students. As a consequence of both historical and contemporary patterns of racial discrimination, coupled with the segregation of schools by race, ethnicity, and SES, there are substantial correlations between the percent of students who are African American and/or Latino and the percent of students who are from low-income families. These correlations are found not only in schools, but also in the neighborhoods (census tracts) comprising the school districts. We have just seen that in both Houston and Philadelphia the African-

American and Latino communities are segregated, in the cities and in the schools. Across the census tracts and schools in both cities there are strong correlations between rates of poverty and the proportion of the tracts' population that are African American or Latino. Given the strength of the correlations (.612 in Philadelphia and .757 in Houston) between the presence of minorities and concentrations of low income, it is impossible to separate the effects of these characteristics of student populations.

In addition to the racial composition of students and the percent of students who are qualified for free or reduced-price lunches, the school profile databases include information describing some of the elements of the academic climate of the schools: the average daily attendance, the rates of student mobility into and out of each school, and the average achievement test scores. There is also information describing characteristics derived from policy decisions: school budgets, student/teacher ratios, the presence of magnet programs, the racial composition, and the tenure, training, and attendance rates of teachers.

Although we initially included a large number of characteristics, there were only three--in addition to racial and economic composition--which were found to have independent effects on student achievement. These were rates of student turnover or mobility, the average daily attendance, and whether a school is a magnet school. Some of the other characteristics, such as the percent of experienced teachers, were found to be correlated with higher achievement scores, but their effects proved to be spuriously tied to the economic composition of student bodies. Apparently experienced teachers opt to teach in schools with fewer low-income students. In Houston, the zero-order correlations indicated low student/teacher ratios were associated with lower achievement scores. This correlation is also spurious--a consequence of the lower student/teacher ratios found in schools with higher proportions of low-income students. The results of the regression analyses are presented in Table 8, showing the standardized regression coefficients for those characteristics which were significantly related to the average level of achievement.

The basic results are similar for both cities. Schools with higher proportions of students who qualified for free or reduced-price lunches, with higher proportions of minority students, and with higher rates of student turnover had lower achievement test scores. Higher rates of attendance are associated with higher test scores in Philadelphia, although not in Houston. Finally, there are significant and positive effects of magnet school programs on test scores. These programs are effective in teaching and/or in attracting the better students away from neighborhood schools.

Table 8
School-Level Factors Affecting Average Reading Achievement: Philadelphia and Houston Elementary Schools

Standardized Regression Coefficients

	Philadelphia	Houston
% Low-Income Students	-.589	-.399
% Minority Students	-.137	-.279
Student Turnover	-.108	-.162
Average Daily Attendance	.172	N.S.
Presence of Magnet Program	.089	.107
Explained Variance R^2	.812	.652

The regression results also provide a partial answer to the question of the impact of concentrations of racial/ethnic minorities and concentrations of low-income students on achievement test scores. The standardized regression coefficients are indicative of the relative importance of the variables included in the analysis. While all of these variables are statistically significant, the Beta weights for the percent of low-income students are larger than the Beta weights for the percent of students who are minorities. The difference is substantial among Philadelphia schools (-.539 and -.137) and less dramatic in Houston (-.399 and -.279). These results indicate that the economic characteristics of students are more important than their racial characteristics as determinants of school success.

We have already noted that in both cities, but particularly in Houston, these characteristics of schools are so highly correlated that it is impossible to measure one of these variables without the confounding effects of the second. Regression analysis provides a means of partitioning the explanatory power of two variables. We do this by computing the variance in achievement score which is explained by each of the two variables alone, as well as the two variables simultaneously. The variance which is explained by both variables simultaneously is composed of three parts: (a) that which is attributed to racial/ethnic concentrations alone, (b) that which is attributed to low-income concentrations alone, and (c) that which is shared by both income and racial concentrations. To partition explained variance in this way, we have run a series of regression analyses in which different variables were added to the equations in a stepwise fashion. The resulting R^2s reflect the total variance that is explained by the variables included in each step. Table 9 presents the results of this series of analyses for the two school districts.

The first two lines provide the percent of the variance which is explained by using the percent of students who are minorities. These are 39% in Philadelphia and 55% in Houston. The second line indicates that using only the percent of students who are low income one may explain 77% of the variance in Philadelphia and 61% in Houston. As with the Beta weights, these bivariate relationships indicate that economic concentrations are more important than are racial concentrations as determinants of school success.

The problem of shared variance is depicted on the third line, showing that the variance which is explained by the economic and racial character of students taken together is substantially smaller than the sum of the variances which they explain alone. To ascertain the amount of variance which may be attributed solely to concentrations of minorities or low-income students, we compute the difference between what is explained by one and two variables. For example, among Philadelphia schools the variance which may be attributed to concentrations of low-income students alone is the variance which is added by income. Or, the variance explained by two variables minus the variance explained by percent

minorities alone [.772-.394=.378]. Conversely, we calculate the variance with is due to racial concentrations by subtracting the difference between what is explained by income concentration alone from the variance which is explained by both variables simultaneously, i.e., .772-.769=.003. The amount of explained variance that is shared by economic and racial character of the schools is obtained by subtracting these estimates of independent variance (.003 and .378) from the total variance explained by both variables, i.e., [.772-(.003 +.378)=.383]. We have repeated these calculations for both Philadelphia and Houston, and for each of the variables which have been included in these analyses. The results are summarized in the second half of Table 9.

Table 9
Explained Variance in Average Achievement Scores
by Different Multiple Regression Analyses

Characteristics Included in Analysis	Philadelphia	Houston
% Minority Alone	.394	.545
% Low Income Alone	.769	.614
Minority and Income	.773	.622
% Low Income, % Minority, Attendance, and Mobility	.806	.645
All Variables	.812	.652
Variance Attributable to:		
% Low Income	.378	.077
% Minority	.004	.009
Shared Income and Minority	.390	.536
Mobility and Attendance	.033	.022
Magnet Programs	.006	.007
Total Explained Variance	.812	.652
Unmeasured Factors	.188	.348

There are several conclusions which may be drawn from these results. First, as indicated by the bivariate R^2, and by the variance which is explained by the racial and economic character of schools, the

concentration of low-income students is the more important determinant of student achievement. The differences between the effects of these two characteristics are substantial among Philadelphia schools, yet relatively small among Houston's schools. The second, and perhaps most important, conclusion is that not only are racial and economic character of school correlated, but the explained variance which they share is greater than the variance which may be attributed to either alone. Indeed, in Houston the amount of explained variance which is shared between minority and low income concentrations (53%) makes up for more than 80% of the total variance which is explained. Among Philadelphia schools the shared variance (38%) is almost half of the total explained variance. Finally, we can see that when they are entered into the stepwise analysis after low income and racial composition, the amount of variance which may be attributed to other characteristics of schools (student mobility, attendance, and the presence of magnet school programs) is substantially smaller than that which is explained by their racial and class character.[8]

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[8] The calculations we have presented in Table 9 are based on the assumption that these other characteristics are independent of the racial and economic character of student populations. In fact we know that this is an incorrect assumption. Indeed we have seen in the first half of this paper that magnet school programs have a direct effect upon both the racial and economic character of schools. The model which we used assumed that racial and socioeconomic compositions of students and school policy were exogenous (independent) variables. The character of the academic climate (measured here by rates of attendance and student mobility) is viewed as dependent upon the exogenous variables. Examination of the zero-order correlations indicates that attendance and mobility are correlated with the percent of students qualified for free or reduced-price lunches. Lower attendance rates and higher rates of student turnover are associated with higher proportions of low-income students. In Philadelphia lower attendance and higher rates of student mobility or turnover is associated with schools containing larger proportions of Latino students. This reflects the mobile character of the city's Latino population. In Houston the opposite pattern is found--schools dominated by either Latino or African-American students have lower rates of turnover. We have conducted these analyses and partition-explained variance following each of these alternative models. That analysis indicates that a small proportion is attributable to racial character and a much larger proportion should be attributed to the economic composition of schools. Given the ambiguity and complexity of the nature of these relationships we finally resolved not to attempt to partition the variance in achievement scores which was accounted for by these characteristics to either the racial or economic composition of the schools.

Summary and Conclusion

The racial and economic character of student populations is the outcome of the racial and economic segregation of cities into neighborhoods of relatively homogeneous groups, parental/student choice for private or public schools, and magnet school programs. In spite of the fact that this investigation has included two very different cities, the results which have been obtained regarding the impact of neighborhood segregation, parental-student choice, and the development of magnet school programs are strikingly similar.

A major difference in the schools of Philadelphia and those of Houston appears in part a result of the pattern of segregation between Latino and white populations. In Philadelphia these populations are segregated to a much greater extent than they are in Houston. The outcome of this social character of the city is that in Philadelphia there are several neighborhoods which are predominantly white and low-income areas. In Houston such neighborhoods and schools are relatively rare as a consequence of the residential integration of low-income whites with the Latino population. The outcome is that the relationship between percent minority and percent low incomes is much stronger in Houston than in Philadelphia. Philadelphia has poor white schools, and several schools which are middle income and African American. The latter are rare in Houston.

We have also seen that in addition to the effects of the ecological structure of these cities and their neighborhoods, school policy has had direct effects upon the patterns of racial and economic integration of the schools. Magnet school programs, characterized by voluntary busing of selected students from distant areas, have reduced the degree of racial segregation between African-American and white students in the public schools. This effect appears to be limited to students attending magnet schools.

There have been two important secondary consequences of these programs. First they have created a two-tiered system of schools within these two public school systems. Second they have increased the degree of economic segregation, both between magnet and neighborhood schools, and among

neighborhood schools. Students from higher income families living in economically heterogeneous neighborhoods are more likely to attend magnet schools, thereby increasing the proportions of low-income students in the neighborhood schools.

Our analysis of the impact of racial and economic concentrations of students and other characteristics of schools indicates that the most important determinant of academic success is the proportion of students who are from low income families. The failure of such schools is the result of a series of characteristics such as the withdrawal of resources, diminished teacher commitment, disinterested families and communities. These schools are characterized by higher rates of student turnover, lower attendance, and higher rates of disorder. A prescription for school failure must include concentrating minority populations in poverty. That has occurred in both of these cities and particularly in their neighborhood schools.

Over the last decades following the 1954 Supreme Court decision a substantial amount of educational resources have been invested in efforts to reduce levels of racial segregation in schools. There has been a corresponding amount of social science research and debate generated around the necessity and outcome of these efforts. Our research has focused on two very different school districts which have established similar and successful programs to reduce racial segregation. These programs have had the apparently unintended consequence of increasing the economic segregation of students, while they have had relatively little if any effect of the large proportion of minority students who have not participated.

One of the important lessons which should be derived from this analysis is that policy interventions which focus on relatively narrow outcomes are likely to have consequences which are not anticipated. School systems are systemic--change in one element is likely to reverberate throughout the system. Policy development must be broadly, not narrowly conceived and implemented. The second major conclusion which must be drawn from this analysis is that if the choice must be made between reducing racial segregation or economic segregation, the latter is more important for academic

achievement. The agenda for change in public schools must include efforts at reducing the concentrations of low-income students. Finally, a note regarding magnet schools. They are clearly successful--either as a consequence of the nature of the programs which they provide or of the students who they attract, or both. The problems which they generate are systemic and selective, not internal. We see them as important models for urban schools if they are inclusive and widespread rather than exclusive and concentrated in a relatively few (often better off) neighborhoods.

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The National Center on Education in the Inner Cities

The National Center on Education in the Inner Cities (CEIC) was established on November 1, 1990 by the Temple University Center for Research in Human Development and Education (CRHDE) in collaboration with the University of Illinois at Chicago and the University of Houston. CEIC is guided by a mission to conduct a program of research and development that seeks to improve the capacity for education in the inner cities.

A major premise of the work of CEIC is that the challenges facing today's children, youth, and families stem from a variety of political and health pressures; their solutions are by nature complex and require long-term programs of study that apply knowledge and expertise from many disciplines and professions. While not forgetting for a moment the risks, complexity, and history of the urban plight, CEIC aims to build on the resilience and "positives" of inner-city life in a program of research and development that takes bold steps to address the question, "What conditions are required to cause massive improvements in the learning and achievement of children and youth in this nation's inner cities?" This question provides the framework for the intersection of various CEIC projects/studies into a coherent program of research and development.

Grounded in theory, research, and practical know-how, the interdisciplinary teams of CEIC researchers engage in studies of exemplary practices as well as primary research that includes longitudinal studies and field-based experiments. CEIC is organized into four programs: three research and development programs and a program for dissemination and utilization. The first research and development program focuses on the *family* as an agent in the education process; the second concentrates on the *school* and factors that foster student resilience and learning success; the third addresses the *community* and its relevance to improving educational outcomes in inner cities. The focus of the *dissemination and utilization* program is not only to ensure that CEIC's findings are known, but also to create a crucible in which the Center's work is shaped by feedback from the field to maximize its usefulness in promoting the educational success of inner-city children, youth, and families.

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